Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims

1.-62. (Canceled)

63. (Currently amended) A method of reducing acoustic feedback in a system comprising:

sequentially converting a buffered acoustic signal to a plurality of sequential frames in a frequency domain, each frame comprising an array of frequency magnitude bins;

comparing an old value of a first frequency magnitude bin that is included in a first frame of the sequential frames with a new value of the first frequency magnitude bin that is included in a second frame of the sequential frames;

in response to the new value being greater than the old value, adjusting the old value based on the new value and a filter coefficient;

identifying the first frequency magnitude bin as a candidate frequency in response to the adjusted old value exceeding a threshold value; [[and]]

testing for a predetermined amount of reduction in a measured amplitude at the candidate frequency by application of a notch filter to the candidate frequency; and

bypassing the notch filter if the amount of reduction in a measured amplitude at the candidate frequency is not reduced by the predetermined amount.

64. (Previously Presented) The method of Claim 63 where adjusting the old value comprises calculating the filter coefficient based on a determined time value to reach the threshold value.

65. (Previously Presented) The method of Claim 64 where calculating the filter coefficient comprises defining the determined time value as the time taken to reach 6dB below the threshold value.

66. (Previously Presented) The method of Claim 63 where identifying the first frequency magnitude bin as a candidate frequency comprises passing an amplitude and a frequency magnitude bin number of the old value to a threshold detection process.

67. (Previously Presented) The method of Claim 63 where identifying the first frequency magnitude bin as a candidate frequency comprises determining when the old value is above a relative threshold and an absolute threshold.

68. (Currently amended) The method of Claim 63 where identifying the first frequency magnitude bin as a candidate frequency further comprises ~~detecting a threshold and~~ comparing [[the]] a magnitude of the first frequency magnitude bin to an absolute threshold variable and, in response to the magnitude being less than the absolute threshold variable, discontinuing identification of the first frequency magnitude bin as the candidate frequency.

69. (Previously Presented) The method of Claim 63 where testing for a predetermined amount of reduction further comprises assigning a state machine to the candidate frequency and executing a state machine algorithm.

70. (Previously Presented) The method of Claim 69 where assigning a state machine comprises assigning a plurality of state machines that are equal to a plurality of notch filters being simultaneously applied to a plurality of candidate frequencies.

71. (Previously Presented) The method of Claim 63 where testing for a predetermined amount of reduction comprises setting the notch filter to the candidate frequency at a given attenuation depth and bandwidth.

72. (Previously Presented) The method of Claim 63 further comprising tracking the status of the notch filter with a state machine.

73. (Canceled)

74. (Previously Presented) The method of Claim 63 where the predetermined amount is 3dB.

75. (Currently amended) The method of Claim 63 further comprising assigning a state machine[[;]] and tracking the status of the notch filter with the state machine~~, bypassing the notch filter if the amount of reduction in a measured amplitude at the candidate frequency is not reduced by the predetermined amount, and reassigning the state machine and the notch filter to another candidate frequency~~.

76. (Previously Presented) The method of Claim 63 where testing for a predetermined amount of reduction further comprises setting the notch filter to an attenuation depth of 6dB.

77. (Previously Presented) The method of Claim 76 where setting the notch filter further comprises increasing the attenuation depth of the notch filter when feedback is detected at the candidate frequency already being filtered.

78. (Canceled)

79. (Previously Presented) A method of reducing acoustic feedback in a system comprising:

selecting a candidate frequency of an acoustic signal;

assigning a state machine to the candidate frequency;

testing the candidate frequency by setting a notch filter associated with the state machine to the candidate frequency at a determined depth and bandwidth;

tracking a status of the notch filter and determining whether the notch filter is idle or filtering;

measuring an amplitude of the candidate frequency after a predetermined test time to determine whether the amplitude has been reduced by a determined value;

setting the notch filter to a depth of 0dB in response to the amplitude of the candidate frequency not being reduced by the determined value; and

reassigning the state machine to a different candidate frequency.

80. (Previously Presented) The method of Claim 79 further comprising setting the filter in a filtering state at the candidate frequency to the determined depth and bandwidth in response to the candidate frequency being reduced by the determined value.

81. (Previously Presented) The method of Claim 79 where measuring an amplitude of the candidate frequency comprises comparing a reduction in the amplitude to the determined value of 3dB.

82.-88. (Canceled)

89. (Previously Presented) A method of reducing acoustic feedback in a system comprising:

passing a first candidate frequency to a state machine having a time limit;

identifying a second candidate frequency;

checking a state flag to determine whether the state flag is in a testing state for the first candidate frequency passed to the state machine; the testing state further comprising:

determining whether the time limit for the state machine has expired;

retrieving a current bin magnitude of the first candidate frequency in response to expiration of the time limit;

comparing the current bin magnitude of the first candidate frequency to a determined value;

determining whether the second candidate frequency is set to a substantially similar frequency as the first candidate frequency;

increasing a depth of a notch filter in response to determination that the second candidate frequency is the substantially similar frequency as the first candidate frequency; and

setting the state flag to filtering in response to the current bin magnitude being reduced by the determined value.

90. (Previously Presented) The method of Claim 89 further comprising setting the state flag to idle in response to lack of a reduction in the current bin magnitude by the determined amount; and determining new filter parameters.

91. (Previously Presented) The method of Claim 90 where the new filter parameters include a new frequency, a bandwidth, and a notch depth.

92. (Currently amended) The method of Claim 91 where the determining step further comprises determining a bandwidth of the notch filter as a function of a sampling rate.

93. (Canceled)

94. (Previously Presented) The method of Claim 63 further comprising setting the old value equal to the new value in response to the new value being less than the old value.

95. (New) A method of reducing acoustic feedback in a system comprising:

sequentially converting a buffered acoustic signal to a plurality of sequential frames in a frequency domain, each frame comprising an array of frequency magnitude bins;

comparing an old value of a first frequency magnitude bin that is included in a first frame of the sequential frames with a new value of the first frequency magnitude bin that is included in a second frame of the sequential frames;

in response to the new value being greater than the old value, adjusting the old value based on the new value and a filter coefficient;

identifying the first frequency magnitude bin as a candidate frequency in response to the adjusted old value exceeding a threshold value;

testing for a predetermined amount of reduction in a measured amplitude at the candidate frequency by application of a notch filter to the candidate frequency; and

setting the notch filter to a depth of 0dB in response to the measured amplitude at the candidate frequency not being reduced by the predetermined amount of reduction.

96. (New) The method of Claim 95 where adjusting the old value comprises calculating the filter coefficient based on a determined time value to reach the threshold value.

97. (New) The method of Claim 96 where calculating the filter coefficient comprises defining the determined time value as the time taken to reach 6dB below the threshold value.

98. (New) The method of Claim 95 where identifying the first frequency magnitude bin as a candidate frequency comprises passing an amplitude and a frequency magnitude bin number of the old value to a threshold detection process.

99. (New) The method of Claim 95 where identifying the first frequency magnitude bin as a candidate frequency comprises determining when the old value is above a relative threshold and an absolute threshold.

100. (New) The method of Claim 95 where identifying the first frequency magnitude bin as a candidate frequency further comprises comparing a magnitude of the frequency magnitude bin to an absolute threshold variable and, in response to the magnitude being less than the absolute threshold variable, discontinuing identification of the first frequency magnitude bin as the candidate frequency.

101. (New) The method of Claim 95 where testing for a predetermined amount of reduction further comprises assigning a state machine to the candidate frequency and executing a state machine algorithm.

102. (New) The method of Claim 101 where assigning a state machine comprises assigning a plurality of state machines that are equal to a plurality of notch filters being simultaneously applied to a plurality of candidate frequencies.

103. (New) The method of Claim 95 where testing for a predetermined amount of reduction comprises setting the notch filter to the candidate frequency at a given attenuation depth and bandwidth.

104. (New) The method of Claim 95 further comprising tracking the status of the notch filter with a state machine.

105. (New) The method of Claim 95 where the predetermined amount of reduction is 3dB.

106. (New) The method of Claim 95 where testing for a predetermined amount of reduction further comprises setting the notch filter to an attenuation depth of 6dB.

107. (New) The method of Claim 106 where setting the notch filter further comprises increasing the attenuation depth of the notch filter when feedback is detected at the candidate frequency already being filtered.

108. (New) A method of reducing acoustic feedback in a system comprising:

sequentially converting a buffered acoustic signal to a plurality of sequential frames in a frequency domain, each frame comprising an array of frequency magnitude bins;

comparing an old value of a first frequency magnitude bin that is included in a first frame of the sequential frames with a new value of the first frequency magnitude bin that is included in a second frame of the sequential frames;

in response to the new value being greater than the old value, adjusting the old value based on the new value and a filter coefficient;

identifying the first frequency magnitude bin as a candidate frequency in response to the adjusted old value exceeding a threshold value;

testing for a predetermined amount of reduction in a measured amplitude at the candidate frequency by application of a notch filter to the candidate frequency;

assigning a state machine;

tracking the status of the notch filter with the state machine, bypassing the notch filter if the amount of reduction in a measured amplitude at the candidate frequency is not reduced by the predetermined amount, and reassigning the state machine and the notch filter to another candidate frequency.

109. (New) The method of Claim 108 further comprising setting the old value equal to the new value in response to the new value being less than the old value.